

## WHAT IS CLAIMED IS:

1. A body frame for a motorcycle, comprising:
  - a main frame having a reinforcing member, which is a forged product, and a portion that requires a high strength against a shock load transmitted from a road surface; and
  - a pair of sidewalls and a connecting wall for connecting the sidewalls, the sidewalls creating spaces opened outward in cross-section such that the connecting wall has an external face positioned in the portion that requires high strength.
2. The body frame for a motorcycle according to claim 1, wherein the main frame comprises a head pipe unit, made up of cast products, including a head pipe for supporting a front fork, and upper and lower gussets extending obliquely downward while widening in a rearward manner, and
  - wherein the reinforcing member is a down frame member comprising:
    - a lower head connected to a lower end of the head pipe and having a bearing seat; and
    - a down frame extending from the lower head along lower edges of the lower gusset, the down frame covering the lower edges of the lower gusset from below and having the connecting wall with its external face facing downward and the sidewalls jointed to each lower edge of the lower gusset.
3. The body frame for a motorcycle according to claim 1, wherein the main frame comprises a head pipe unit, which is made up of casting products, including a head pipe for supporting a front fork, and upper and lower gussets extending obliquely downward while widening in a rearward manner, and
  - wherein the reinforcing member is a tank rail member comprising:
    - an upper head connected to an upper end of the head pipe and having a bearing seat; and

a tank rail extending from the upper head along upper edges of the upper gusset, the tank rail covering the upper edge of the upper gusset from above and having the connecting wall with its external face facing upward and the sidewalls jointed to each upper edge of the upper gusset.

4. The body frame for a motorcycle according to claim 1, wherein the main frame comprises the head pipe unit, made up of cast products, including a head pipe for supporting a front fork, and upper and lower gussets extending obliquely downward while widening in a rearward manner, and wherein the reinforcing member is a down frame member comprising:

a lower head connected to a lower end of the head pipe and having a bearing seat, and the down frame extending from the lower head along lower edges of the lower gusset; and

a tank rail member comprising:

an upper head connected to an upper end of the head pipe and having a bearing seat; and

a tank rail extending from the upper head along the upper edges of the upper gusset, the down frame covering the lower edges of the lower gusset from below and having the connecting wall with its external face facing downward and the sidewalls jointed to each lower edge of the lower gusset, and the tank rail member covering the upper edges of the upper gusset from above and having the connecting wall with its external face facing upward and the sidewalls jointed to each upper edge of the upper gusset.

5. The body frame for a motorcycle according to claim 2, wherein the head pipe unit has an opening on an undersurface of the lower gusset, and

wherein the down frame is so disposed as to close the opening on the undersurface of the lower gusset and have the connecting wall with its external

face facing downward and the sidewalls positioned at each edge of the opening on the undersurface, with edges of the sidewalls welded to the lower gusset.

6. The body frame for a motorcycle according to claim 4, wherein the head pipe unit has openings with each opening on a top surface of the upper gusset and an undersurface of the lower gusset, wherein the down frame is so disposed to close the opening on the undersurface of the lower gusset and have the connecting wall with its external face facing downward and the sidewalls positioned at each edge of the opening on the undersurface, with edges of the sidewalls welded to the lower gusset, and wherein the tank rail is so disposed to close the opening on the top surface of the upper gusset and have the connecting wall with its external face facing upward and the sidewalls positioned at each edge of the opening on the top surface, with the edges of the sidewalls welded to the upper gusset.

7. The body frame for a motorcycle according to claim 2, wherein a connecting portion is formed integrally with the head pipe unit to connect rear portions of the upper and lower gussets to each other, and a rear cushion bracket is formed integrally with the rear portion of the upper gusset extending therefrom.

8. The body frame for a motorcycle according to claim 1, wherein the main frame comprises:

- a head pipe for supporting a front fork;
- a tank rail extending obliquely downward from a top portion of the head pipe extending in a rearward manner;
- a down frame extending downward from a bottom portion of the head pipe;

and

- a pair of left and right down tubes extending in the rearward manner, and

wherein the reinforcing member is a pair of left and right rear arm brackets interposed across rear ends of the left and right down tubes and a rear end of the tank rail to connect them to each other and to support the rear arms for

an up-down swinging motion, each of the rear arm brackets being disposed such that a part of a connecting wall, which is adjacent to the connecting portion with the tank rail, has the external face facing the inner side in a width direction.

9. The body frame for a motorcycle according to claim 8, wherein each of the left and right rear arm brackets includes a lower half portion approximately vertically extending upward from each rear end of the left and right down tubes positioned with an interval in the width direction when viewed in the longitudinal direction, and an upper half portion obliquely extending in an inner side in the width direction from the lower half portion to the rear end of the tank rail positioned in a center portion of the width direction, the upper half portion having the connecting wall with its external face facing the inner side in the width direction and the lower half portion having the connecting wall with its external face facing outward.

10. The body frame for a motorcycle according to claim 9, wherein a connecting portion of the rear arm brackets to the tank rail is welded thereto such that the connecting wall has the external face facing an outer side in the width direction, and the connecting portion with the tank rail has a closed cross-section.

11. The body frame for a motorcycle according to claim 8, wherein lower ends of the left and right rear arm brackets are connected to each other via an angular cylindrical cross pipe made of an extrusion extending in the width direction, and a work hole is formed through a portion to receive a fastening bolt for change pedals on the cross pipe.

12. The body frame for a motorcycle according to claim 1, wherein the main frame comprises:

a head pipe unit including a head pipe for supporting a front fork, and upper and lower gussets extending obliquely downward while widening in a rearward manner; and

a pair of left and right down tubes connected to a lower end of the lower gusset and extending downward toward in the rearward direction, and

wherein the reinforcing member is a down frame member comprising:

a lower head connected to a lower end of the head pipe and having a bearing seat and a down frame extending from the lower head along a lower edge of the lower gusset;

a tank rail member including an upper head connected to an upper end of the head pipe and a tank rail extending from the upper head along an upper edge of the upper gusset; and

left and rear arm brackets interposed across rear ends of the left and right down tubes and a rear end of the upper gusset to connect them to each other, the down frame covering the lower edge of the lower gusset from below and having the connecting wall with its external face facing downward and the sidewalls jointed to each lower edge of the lower gusset, and the tank rail, the tank rail member covering upper edges of the upper gusset from above and having the connecting wall with its external face facing upward and the sidewalls jointed to each upper edge of the upper gusset, and each of the rear arm bracket being disposed such that a part of the connecting wall, which is adjacent to the connecting portion with the tank rail, has the external face facing an inner side in the width direction.

13. The body frame for a motorcycle according to claim 12,

wherein the down frame has, at its lower end, a receiving portion provided with a mounting opening facing forward,

wherein each of the left and right rear arm brackets has, at its lower end, a receiving portion provided with a mounting opening facing forward, and

wherein each of the left and right down tubes has its rear end attached to the receiving portion of the rear arm bracket from the front, and its front end attached to the receiving portion of the down frame from the front, the ends being welded to the respective receiving portions.

14. A body frame for a motorcycle, comprising:

a main frame having a reinforcing member, which is a forged product, and a means for requiring a high strength against a shock load transmitted from a road surface; and

a pair of sidewalls and a connecting wall for connecting the sidewalls, the sidewalls creating spaces opened outward in cross-section such that the connecting wall has an external face positioned in the means for requiring a high strength.

15. The body frame for a motorcycle according to claim 14, wherein the main frame comprises a head pipe unit, made up of cast products, including a head pipe for supporting a front fork, and upper and lower gussets extending obliquely downward while widening in a rearward manner, and

wherein the reinforcing member is a down frame member comprising:

a lower head connected to a lower end of the head pipe and having a bearing seat; and

a down frame extending from the lower head along lower edges of the lower gusset, the down frame covering the lower edges of the lower gusset from below and having the connecting wall with its external face facing downward and the sidewalls jointed to each lower edge of the lower gusset.

16. The body frame for a motorcycle according to claim 14, wherein the main frame comprises a head pipe unit, which is made up of casting products, including a head pipe for supporting a front fork, and upper and lower gussets extending obliquely downward while widening in a rearward manner, and

wherein the reinforcing member is a tank rail member comprising:

an upper head connected to an upper end of the head pipe and having a bearing seat; and

a tank rail extending from the upper head along upper edges of the upper gusset, the tank rail covering the upper edge of the upper gusset from above and having the connecting wall with its external face facing upward and the sidewalls jointed to each upper edge of the upper gusset.

17. The body frame for a motorcycle according to claim 14, wherein the main frame comprises the head pipe unit, made up of cast products, including a head pipe for supporting a front fork, and upper and lower gussets extending obliquely downward while widening in a rearward manner, and wherein the reinforcing member is a down frame member comprising:

a lower head connected to a lower end of the head pipe and having a bearing seat, and the down frame extending from the lower head along lower edges of the lower gusset; and

a tank rail member comprising:

an upper head connected to an upper end of the head pipe and having a bearing seat; and

a tank rail extending from the upper head along the upper edges of the upper gusset, the down frame covering the lower edges of the lower gusset from below and having the connecting wall with its external face facing downward and the sidewalls jointed to each lower edge of the lower gusset, and the tank rail member covering the upper edges of the upper gusset from above and having the connecting wall with its external face facing upward and the sidewalls jointed to each upper edge of the upper gusset.

18. The body frame for a motorcycle according to claim 15, wherein the head pipe unit has an opening on an undersurface of the lower gusset, and

wherein the down frame is so disposed as to close the opening on the undersurface of the lower gusset and have the connecting wall with its external

face facing downward and the sidewalls positioned at each edge of the opening on the undersurface, with edges of the sidewalls welded to the lower gusset.

19. The body frame for a motorcycle according to claim 17,  
wherein the head pipe unit has openings with each opening on a top surface of the upper gusset and an undersurface of the lower gusset,  
wherein the down frame is so disposed to close the opening on the undersurface of the lower gusset and have the connecting wall with its external face facing downward and the sidewalls positioned at each edge of the opening on the undersurface, with edges of the sidewalls welded to the lower gusset, and  
wherein the tank rail is so disposed to close the opening on the top surface of the upper gusset and have the connecting wall with its external face facing upward and the sidewalls positioned at each edge of the opening on the top surface, with the edges of the sidewalls welded to the upper gusset.

20. A method for manufacturing a body frame for a motorcycle comprising:  
providing a main frame having a reinforcing member which is a forged product;  
supplying a portion that requires high strength against a shock load transmitted from a road surface;  
connecting a pair of sidewalls with a connecting wall; and  
creating spaces opened outward in cross section such that the connecting wall has an external face positioned in the portion that requires high strength.